How Prepared are Volume House Builders to meet Post-Pandemic Dimensions of Environmental Sustainability?

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Background

Covid-19 has changed the requirements for sustainable life within the built environment by changing people's perception of work and home environments which now overlap.

Aim

To understand how the dimensions of environmental sustainability have changed due to the pandemic and whether these are being achieved by mitigation measures currently being undertaken by house builders?

Environmental Sustainability Post-Covid

1. Hydrological Cycle

As more people are working from home due to the Pandemic, water consumption has moved from public spaces to households. House builders may look to provide spaces where social distancing can occur, increasing the need for permeable road surfaces.

2. Air Quality

Post-Covid many will remain cautious about use of public transport, likely increasing use of private auto. To reduce the impacts of this, provision of charging points for electric vehicles, shared transport schemes and site layouts that encourage active travel are vital.

3. Urban Micro-Climate and Heat Island Effect

High population density is linked to the spread of Covid-19, possibly leading to a shift from high density development. Potentially mitigating the urban heat island effect by increasing space for planting. Lower density sites require larger road networks, absorbing more heat than vegetation. This can be mitigated through use of light coloured road surfaces.

4. Ecology and Biodiversity

More people working from home increases demand for green spaces within residential areas, providing the opportunity to create biodiversity gain and interconnect green infrastructure.

Method

An inductive process of qualitative research is used to gain an understanding of how the dimensions of environmental sustainability have changed due to the pandemic and if they are being achieved by current mitigation measures.

A literature review and analysis of relevant policy has been used to develop a framework for investigation. This framework is then used to analyse the selected case studies.

Post-Pandemic Environmental Evaluation Matrix Results

1. Rocky Lane - Barratts

Dimensions	Scores (1-10)
1. Hydrometeorological Cycle	
-SUDs	6
-Surface water drainage	7
-Water recycling systems	0
2. Air Quality	
-Planting	6
-Walkability	5
-Cyclability	3
-Electric car charging points	0
-Shared transport programs	0
3. MicroClimate	
-Prevalence of high albedo surfaces	8
-Planting	7
4. Ecology and Biodiversity	
-Green Infrastructure	6
-Range of species	5
-Green walls and roofs	0

2. Blackberry Drive – Taylor Wimpey

Dimensions	Scores (1-10)
1. Hydrometeorological Cycle	
-SUDs	7
-Surface water drainage	7
-Water recycling systems	0
2. Air Quality	
-Planting	8
-Walkability	6
-Cyclability	4
-Electric car charging points	0
-Shared transport programs	0
3. MicroClimate	
-Prevalence of high albedo surfaces	7
-Planting	8
4. Ecology and Biodiversity	
-Green Infrastructure	8
-Range of species	8
-Green walls and roofs	8

3. Langmore Lane - Barratts

Dimensions	Scores (1-10)
1. Hydrometeorological Cycle	
-SUDs	9
-Surface water drainage	9
-Water recycling systems	0
2. Air Quality	
-Planting	9
-Walkability	8
-Cyclability	7
-Electric car charging points	0
-Shared transport programs	0
3. MicroClimate	
-Prevalence of low albedo surfaces	7
-Planting	9
4. Ecology and Biodiversity	
-Green Infrastructure	9
-Range of species	9
-Green walls and roofs	0

4. Average Scores

Dimensions	Scores (1-10)
1. Hydrometeorological Cycle	
-SUDs	7
-Surface water drainage	7.5
-Water recycling systems	0
2. Air Quality	
-Planting	7.5
-Walkability	6
-Cyclability	4.5
-Electric car charging points	0
-Shared transport programs	0
3. MicroClimate	
-Prevalence of low albedo surfaces	7
-Planting	8
4. Ecology and Biodiversity	
-Green Infrastructure	7.5
-Range of species	7
-Green walls and roofs	0

Findings

The three developments comply with the respective District Plan, however as seen in **Matrix 4** the identified dimensions of Post-Pandemic Environmental Sustainability are only partially delivered at present.

Two of the sites have integrated permeable pavements, however, the third has not, thus showing the inconsistency in mitigation requirements. No grey water recycling systems have been included across the schemes and appears to have been overlooked by the current policy framework. All three sites have Sustainable Urban Drainage Systems, therefore **Dimension 1** of the Matrix is mostly achieved.

The three sites have extensive on-site planting, mitigating air pollution, but as no charging points for electric vehicles, no shared transport schemes, no green walls and with two of three sites layouts don't encourage walking or cycling **Dimension 2** of the Matrix is currently only partially achieved.

Dimension 3 of the Matrix is addressed across the sites as extensive planting and use of light coloured road surfaces are provided. As the green infrastructure matures the mitigation will improve.

Dimension 4 of the Matrix is largely achieved at present with green infrastructure established. Extensive habitat creation has occurred, including the provision of nesting sites. No green walls were provided, which would increase biodiversity gain and help achieve Dimensions 2 and 3 of the Matrix.